



 **FIXON INC. FIXON ENC**
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绿色经营大奖

DREAM, CHALLENGE AND LOVE
CORRUGATED STEEL PIPE



CHANGING THE WORLD GLOBAL COMPANY-FIXON

FIXON INC. is a leading Korean manufacturer of corrugated steel pipe(CSP) and innovative polyethylene laminated(PL) CSP, High strength polyethylene laminated(HPL) CSP and smooth inside CSP(SMART PIPE) for various applications including drainage systems. In addition to the 120 year history of the corrugated steel pipe industry, our experience and technology has changed the conventional concept of corrugated steel pipe and plate.

FIXON INC. got many certificates for its superb technique from government agencies in Korea including 6 patents in overseas, 36 patents, 6 utility models and 14 designs in Korea which other competitors cannot compete with. FIXON INC. is also leading the industry by exporting the products and its technique to more than 10 different countries such as U.S, Russia, China, Australia, Japan etc. for the 1st time.

We promote local economy via increasing the export based on continuous R&D and innovative products and expending our trustworthy networks to neighbors by sharing our profits and creating jobs for our local communities.

FIXON INC. FIXON ENC



History Of FIXON Securities

- 1994. 04 DAESUNG INDUSTRY
- 1995. 03 ACQUIRE KS (KS D3590)
- 1997. 03 DESIGNATED AS OUTSTANDING VENTURE COMPANY
- 2001. 12 ACQUIRE EM(GOOD QUALITY) CERTIFICATE FOR PL CSP
- 2002. 05 DESIGNATED AS GOOD PRODUCTS BY PPS FOR PL CSP
- 2004. 06 TECHNICAL COOPERATION FOR BRIDGE PLATE WITH ARMTEC, CANADA
- 2004. 09 CHANGE COMPANY NAME TO FIXON INC.
- 2006. 06 ACQUIRE NEP CERTIFICATE FOR PF CSP FROM MINISTRY OF INDUSTRY (TECHNICAL STANDARD ASSOCIATION)
- 2007. 05 ESTABLISH JOINT VENTURE COMPANY "FIXON-ARMTEC" FOR BRIDGE PLATE WITH ARMTEC IN CANADA.
- 2008. 04 OPEN SOCIAL WELFARE FACILITY "CHAMSAEMDONGSAN"
- 2008. 07 DAESUNG NEW TECH ACQUISITION IN CHINA
- 2011. 12 NAMWON FACTORY COMPLETION
- 2012. 10 GOOD PRODUCT CERTIFIED BY PPS FOR HPL CSP (PUBLIC PROCUREMENT SERVICE)
- 2013. 03 EXCELLENT GREEN BIZ CERTIFICATE
- 2013. 06 SILVER MEDAL WON AT A COMPETITION BY K-WATER

WORLD 1ST TECHNOLOGY, PRODUCT

HPL CSP

HPL CSP HAS SIGNIFICANTLY INCREASED SERVICE LIFE BY APPLYING HIGH STRENGTH FABRIC POLYETHYLENE FILM TO NORMAL CSP. IT HAS VERY GOOD STRENGTH AGAINST EXTERNAL IMPACT DURING TRANSPORTATION & INSTALLATION.

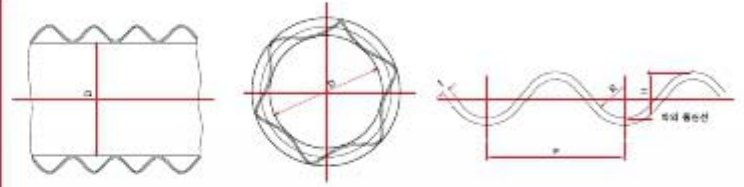


● IMPACT TEST (ASTM D3763)

충격에너지(J)	JPL	FPL	HPL
50 J			
TEST 결과	파괴손상	이상없음	이상없음
60 J	NG		
TEST 결과		파괴손상	이상없음
65 J	NG	NG	
TEST 결과			이상없음

* JEONNAM NEW MATERIAL BIZ SUPPORT CENTER

● PRODUCT



● LAMINATING FILM LAYER



FABRIC PE RESIN
ADHESIVE PE RESIN
GALVANIZATION
STEEL
GALVANIZATION
ADHESIVE PE RESIN
FABRIC PE RESIN

● MATERIAL SPECIFICATION

- RAW MATERIAL: KS D 3506, 600g/m²
HGI
- POLYETHYLENE LAMINATING



▲ HPL FILM SURFACE

JOINTS (COUPLING BAND)



PRODUCT SPECIFICATION

TYPE	DIAMETER (mm)	THICKNESS (mm)	LENGTH (m)
SCP 0RC	150~600	1. 6	1~10
SCP 1RC	300~2000	1. 6~3. 2	
SCP 3RC	900~3300	2. 0~3. 2	

INTERLECTUAL PROPRTY RIGHT

- PATENT NO. 10-1134571
- HGI WITH HPL FILM & ITS CSP
- PATENT NO. 10-1128765
- HPL CSP FORMAINING DEVICE & PRODUCTION METHOD

PRODUCTS

TYPE	FILM	FILM THICKNESS
HPL 301	INSIDE FILM ONLY	THICKER THAN 0. 25mm
HPL 302	FILM ON BOTH SIDES	THICKER THAN 0. 25mm

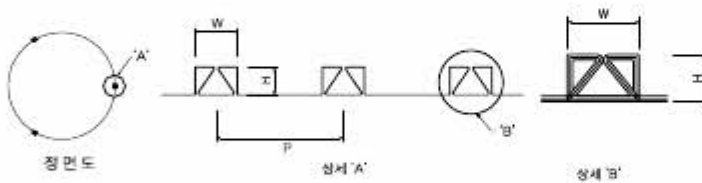
WORLD 1ST TECHNOLOGY, PRODUCT SMART CSP

SMART PIPE HAS RIBS ON ITS EXTERIOR FOR HIGH STRENGTH AND SMOOTH INSIDE FOR BETTER FLOW RATE THAN NORMAL CSP. IT HAS ALL ADVANTAGES OF CSP, PE PIPE AND CONCRETE PIPE.

MATERIAL SPECIFICATION

- RAW MATERIAL : KS D 3506, 600g/m² HGI
- POLYETHYLENE LAMINATING
- ASTM A 742 POLYETHYLENE FILM COATING

PRODUCT EXTERNAL SHAPE



INTERLECTUAL PROPRTY RIGHT

- PATENT NO.10-0949159 CSP
- PATENT NO.10-0956425 PRODUCING DEVICE AND METHOD
- PATENT NO.10-1056929 JOINTS FOR THE CSP



▲ SMOOTH INSIDE PIPE



▲ SP300, SP301, SP302



▲ EXTERNAL RIB FOR HIGH STRENGTH

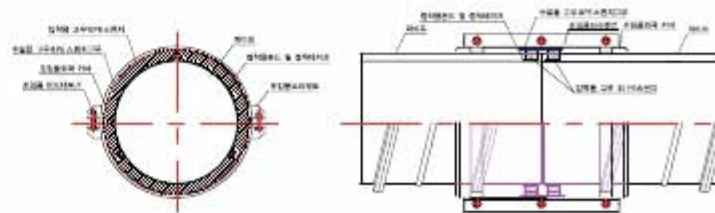
PRODUCT SPECIFICATION

TYPE	DIAMETER (mm)	THICKNESS (mm)	LENGTH (m)
SP 300	300~1500	1.6~2.7	1~10
SP 301	300~1500	1.6~2.7	
SP 302	300~1200	1.6~2.0	

PRODUCTS

TYPE	FILM	THICKNESS
SP 300	NONE	—
SP 301	INSIDE FILM ONLY	THICKER THAN 0.25mm
SP 302	FILM ON BOTH SIDES	THICKER THAN 0.25mm

JOINTS



FLOW RATE TEST RESULT

PIPE MATERIAL	FLOW RATE (n)
FIBER GLASS	0.009~0.013
SMART PIPE	0.010~0.010
STEEL	0.011~0.015
CONCRETE	0.011~0.015

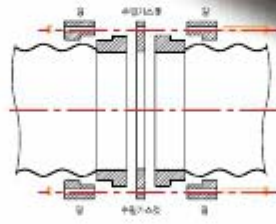
PF CSP

WITH PERMANENTLY IMPLEMENTED FLANGES TO EITHER NORMAL CSP OR PE CSP, IT PASSED WATER LEAKAGE TESTS FOR DRAINAGE PIPE AND CERTIFIED FOR NEP (NEW EXCELLENT PRODUCT) FROM TECHNICAL STANDARD ASSOCIATION. SUITABLE NOT JUST FOR RAINWATER PIPES BUT FOR WASTE WATER PIPE AND IT GUARANTEE FASTER INSTALLATION THAN ANY OTHER SOLUTIONS. NEP PRODUCT (2006)

MATERIAL SPECIFICATION

- RAW MATERIAL: KS D 3506, 600g/m² HGI
- POLYETHYLENE LAMINATING
 - ASTM A 742 POLYETHYLENE FILM LAMINATING

FLANGE



WATER LEAKAGE TEST

DIAMETER	COUPLING BAND (EXISTING JOINT)	PF CSP
Ø300	0.05(ℓ/m) (MINISTRY OF CONSTRUCTION)	0 (ℓ/m)
Ø450	0.075(ℓ/m)	0 (ℓ/m)
Ø600	0.1(ℓ/m)	0 (ℓ/m)
Ø1,000	0.167(ℓ/m)	0 (ℓ/m)

* TEST: KOREA CHEMICAL TEST INSTITUTE/KS TEST INSTITUTE

INTERLECTUAL PROPERTY RIGHT

- PATENT NO. 10-0793437
- CSP JOINT DEVICE USING FLANGE AND FLANGE PRODUCTION METHOD



▲ PF302, PF300



▲ BEFORE CONNECTING PF CSP



▲ CONNECTED PF CSP

PRODUCT SPECIFICATION

TYPE	DIAMETER (mm)	THICKNESS (mm)	LENGTH (mm)
SCR 0RC	250	1.6	1~8
SCR 1RC	300~1000	1.6~2.7	

PRODUCTS

TYPE	FILM	FILM THICKNESS
PF 300	NONE	—
PF 302	FILM ON BOTH SIDES	THICKER THAN 0.25mm



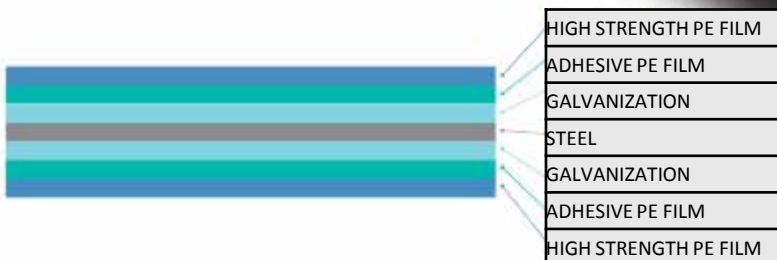
PL CSP

PL CSP HAS DRAMATICALLY INCREASED SERVICE LIFE BY LAMINATING POLYETHYLENE FILM TO NORMAL HGI CSP. SUTABLE FOR WASTE WATER AND SALTY LAND LIKE RECLAIMED LAND AND HARBORS ECT. IT IS STRONG AND ECONOMICAL DUE TO SHORT INSTALLATION PERIOD.

MATERIAL SPECIFICATION

- RAW MATERIAL: KS D 3506, 600g/m² HGI
- POLYETHYLENE LAMINATING
- ASTM A 742 : POLYETHYLENE FILM LAMINATING

FILM LAYER



SERVICE LIFE

PC CONCRETE PIPE	CONCRETE PIPE	VR PIPE	CSP	PL CSP
0~50YEARS	20~30 YEARS	30~40 YEARS	OVER 50 YEARS	OVER 70 YEARS

* FROM KOREA STEEL ASSOCIATION



▲ PL301, PL302

PRODUCTION SPECIFICATION

TYPE	DIAMETER (mm)	THICKNESS (mm)	LENGTH (m)
SCP 0RC	150~600	1. 6	1~10
SCP 1RC	300~2, 000	1. 6~3. 2	
SCP 3RC	900~3, 300	2. 0~3. 2	

PRODUCTS

TYPE	FILM	FILM THICKNESS
PL 301	NONE	-
PL 302	FILM ON BOTH SIDES	THICKER THAN 0. 25mm

INTERLECTUAL PROPERTY RIGHT

PATENT NO. 10-0312859

- POLYETHYLENE FILM LAMINATING DEVICE
AND LAMINATING METHOD

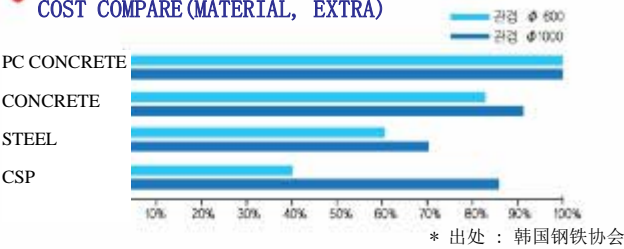
·PATENT NO. 10-0371498

- PL CSP PRODUCTION DEVICE AND PRODUCING
METHOD

NORMAL CSP

ENHANCING THE STRENGTH OF HGI STEEL BY CORRUGATING AND THEN HELICALLY FORMING IT TO PIPE WHICH IS VERY STABLE, HIGHLY DURABLE AND ECONOMICAL DUE TO ITS LONG SERVICE LIFE SO IT CAN BE WIDELY USED FOR LAND DEVELOPING AND ROAD CONSTRUCTION. IT IS IDEAL DRAINAGE SYSTEMS AS IT REDUCES THE COST SIGNIFICANTLY FROM SHORT INSTALLATION PERIOD DUE TO VARIOUS SELECTION OF THE LENGTH FROM 1M TO 10M.

COST COMPARE (MATERIAL, EXTRA)



MATERIAL SPECIFICATION

- RAW MATERIAL: KS D 3506, 600g/m² HGI

PRODUCT SPECIFICATION

TYPE	SIZE		
	PITCH (P)	HEIGHT (H)	RADIUS (R)
SCP 0RS	38.0	6.5	7.1
SCP 1RS	68.0	13.0	17.5
SCP 2RS	76.2	25.4	17.5

PERFORATED PIPE

USED FOR PLAY GROUND, TENNIS COURT, GOLF RESORT, TUNNEL AND PARK.

POPULAR IN LARGE SCALE SPORT GROUNDS DUE TO ITS HIGH STRENGTH
AND DENSE HOLES.

● PRODUCT SPECIFICATION

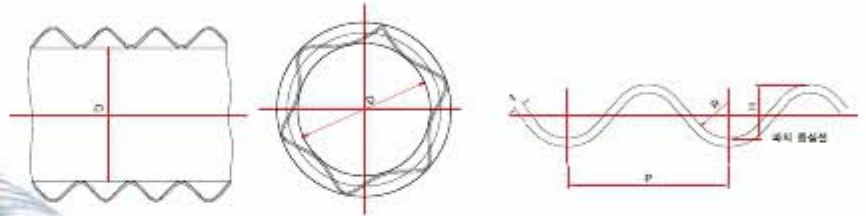
TYPE	DIAMETER (mm)	THICKNESS (mm)	LENGTH (mm)
U ORS	150~600	1.6	1~8



▲ PERFORATED PIPE

● PRODUCT SHIPE

- KS D 3590 (CSP AND ITS SECTION)



TYPE OF JOINTS FOR CSP

ORS



HPL/PL/NORMAL CSP



PF CSP



SMART PIPE



SLEEVE JOINT



COUPLING BAND



FLANGE JOINT



JOINTS



WATERTIGHT BAND



MANHOLE

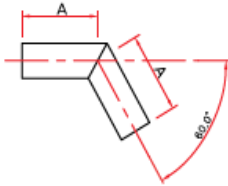


JOINT TEE

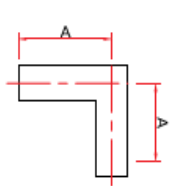


JOINTS AND ANGLE PIPE

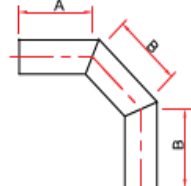
• 60° ANGLE PIPE



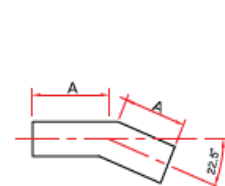
• 90° ANGLE PIPE (Elbow)



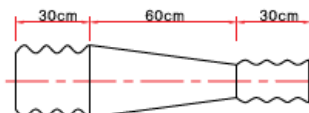
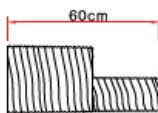
• 90° ANGLE PIPE (Elbow)



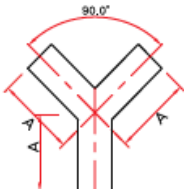
• 22 1/2° ANGLE PIPE (Elbow)



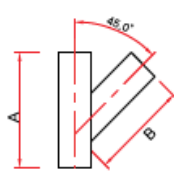
• REDUCER



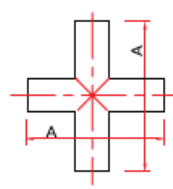
• Y TEE



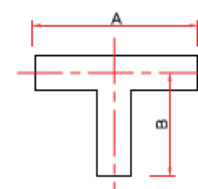
• Y ANGLE (Lateral)



• CROSS



• TEE



APPLICATION BY DIAMETER

COR		KS D3590 1RS (68mm×13mm)															KS D3590 3RS (75mm×25mm)												CONCRETE PIPE	
THICK LIFE	MIN SOIL COVER (m)	1.4t(46YRS)			1.6t(52YRS)			2.0t(64YRS)			2.7t(85YRS)			3.2t(97YRS)			MIN SOIL COVER (m)	2.0t(64YRS)			2.7t(85YRS)			3.2t(97YRS)			(STANDARD 2TYPE)			
		SOIL COVER (m)	PIPE WEIGHT (kg/m)	5% DISTORTION EX-STR LENGTH (kg/m)	SOIL COVER (m)	PIPE WEIGHT (kg/m)	5% DISTORTION EX-STR LENGTH (kg/m)	SOIL COVER (m)	PIPE WEIGHT (kg/m)	5% DISTORTION EX-STR LENGTH (kg/m)	SOIL COVER (m)	PIPE WEIGHT (kg/m)	5% DISTORTION EX-STR LENGTH (kg/m)	SOIL COVER (m)	PIPE WEIGHT (kg/m)	5% DISTORTION EX-STR LENGTH (kg/m)		SOIL COVER (m)	PIPE WEIGHT (kg/m)	5% DISTORTION EX-STR LENGTH (kg/m)	SOIL COVER (m)	PIPE WEIGHT (kg/m)	5% DISTORTION EX-STR LENGTH (kg/m)	SOIL COVER (m)	PIPE WEIGHT (kg/m)	5% DISTORTION EX-STR LENGTH (kg/m)	PIPE WEIGHT (kg/m)	5% DISTORTION EX-STR LENGTH (kg/m)		
DIA (m)	300	0.30	52.6	14.8	29,980	59.4	17.0	33,850	73.0	20.0	41,580																	83.2	2,700	
	350	0.30	35.9	16.4	23,900	40.2	18.7	26,740	48.8	23.0	32,420																	103.2	3,000	
	400	0.30	26.6	18.7	20,210	29.5	21.4	22,380	35.2	26.3	26,740																	128.4	3,300	
	450	0.30	20.9	20.2	17,900	22.6	23.1	19,620	27.0	29.3	23,060																	160.6	3,600	
	500	0.30	17.3	23.1	16,460	18.8	26.4	17,860	21.7	32.3	20,640																	196.4	3,900	
	600	0.30	13.2	27.0	15,090	14.1	30.8	16,050	15.8	38.5	17,990	18.9	50.5	21,520	21.2	59.9	24,200												277.6	4,500
	700	0.30	11.2	30.2	14,830	11.7	34.5	15,540	12.8	43.2	16,970	14.7	56.9	19,560	16.2	67.4	21,520												375.2	5,000
	750	0.30	10.5	32.4	14,950	10.9	37.0	15,570	11.8	46.3	16,800	13.4	61.0	19,070	14.8	72.2	21,050												-	
	800	0.30	10.0	34.5	15,180	10.3	39.5	15,720	11.1	49.3	16,810	12.4	65.0	18,790	13.4	77.1	20,300												487.6	5,400
	900	0.30	9.3	39.1	15,870	9.5	44.7	16,290	10.0	55.5	17,150	10.9	72.8	18,720	11.6	85.0	19,910	0.30	18.6	63.2	31,830	22.7	83.2	38,740				624.8	5,900	
	1000	0.30	8.8	43.7	16,770	9.0	49.9	17,120	9.4	62.1	17,820	10.0	80.7	19,090	10.6	94.0	20,050		15.6	69.0	29,700	18.6	92.0	35,300				774.4	6,300	
	1100	0.30	8.5	48.0	17,810	8.7	54.9	18,110	8.9	67.8	18,680	9.4	88.8	19,730	9.8	103.4	20,530		13.6	75.9	28,500	15.9	101.2	33,130	18.1	119.2	37,820	842.0	6,700	
	1200	0.45	8.3	51.3	18,960	8.4	58.6	19,200	8.6	74.0	19,680	9.0	96.6	20,570	9.3	112.4	21,230	0.30	12.3	83.2	27,940	14.0	109.4	31,830	15.2	130.2	34,680	1,081.2	7,300	
	1300	0.45							8.4	80.2		8.7	104.5					0.45	11.3	90.6		12.6	118.8		13.6	139.9			-	
	1350	0.45							8.3	83.2	21,370	8.6	108.5	22,070	9.1	126.1	23,380		10.9	94.0	27,880	12.1	123.4	30,960	13.0	145.3	33,220	1,310.0	8,300	
	1400	0.45							8.3	86.3		8.5	112.5						10.5	97.5		11.6	128.0		12.4	150.6			-	
	1500	0.45										8.3	120.4	23,750	8.5	141.2	24,180		10.0	103.3	28,470	10.9	136.8	30,960	11.5	161.7	32,790	1,458.4	9,300	
	1600	0.45										8.2	128.4						9.6	110.2		10.3	145.9		10.8	172.5			-	
	1650	0.45										8.2	132.3	25,560	8.3	154.9	25,910		9.4	114.1	29,460	10.1	150.1	31,520	10.5	176.8	33,030	1,809.6	10,300	
	1700	0.45										8.1	136.3						9.2	117.5		9.8	154.7		10.3	182.1			-	
	1800	0.45													8.1	168.6	27,750	0.45	9.0	124.9	30,740	9.5	163.5	32,470	9.9	191.9	33,790	2,066.8	11,300	
	1900																	0.60	8.8	131.8		9.2	172.6		9.5	202.5				
	2000																		8.6	137.6	32,740	9.0	181.4	34,140	9.3	213.6	35,170			12,000
	2100																		8.5	144.9		8.8	190.3		9.0	224.7				
	2200																		8.4	151.8	34,970	8.6	199.3	36,130	8.8	235.4	36,980			12,600
	2300																		8.3	157.6		8.5	215.9		8.7	245.1				
	2400																		8.2	165.0	37,370	8.4	218.5	38,330	8.6	257.6	39,040			13,200

(KOREA STEEL ASSOCIATION, PLEASE CONTACT FOR SMART PIPE DUE TO ITS HIGH EXTERNAL STRENGTH)